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12. The apparatus of Claim ⁸ ~~7~~, wherein the constraint assigning means comprises means for specifying a minimum angle and a maximum angle that said third virtual object can rotate with respect to said origin.--

REMARKS

Favorable reconsideration of the application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-7 and 11-12 are active in this application, Claims 1-7 having been amended, Claims 8 and 9 having been cancelled and Claims 11 and 12 having been added herewith. (Claim 10 was cancelled previously.)

Applicants acknowledge with appreciation the courtesy of an interview extended to Applicants' representative on March 4, 1996. During the interview, the Examiner and Applicants' representative discussed their interpretations of the breadth of Wexelblat's teachings and the breadth of the pending claims. No agreement was reached during the discussion.

In the outstanding Official Action, Claims 1-7 were rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103 as being obvious over Wexelblat et al (hereinafter Wexelblat), U.S. patent number 5,021,976. Claims 8-9 were rejected under 35 U.S.C. § 103 as being unpatentable over Wexelblat in view of Richburg, U.S. patent number 5,159,687. Claims 1-9 further were rejected under 35 U.S.C. § 103 as being unpatentable over

Wexelblat in view of Richburg and further in view of "Virtual Environment Display System" by Fisher et al (hereinafter Fisher).

Applicants have amended the specification to further describe the grouping means. This change finds support in appendix 2, pages 8-10, and in appendix 4, pages 5-8, which were originally filed with the application. Therefore, these changes do not introduce any new matter. Further, the selecting means added in Claims 1 and 7 finds support in appendix 2, pages 14-16, which describe mouse and keyboard commands for selecting parts of virtual objects so that they may be grouped or edited. In addition, the hierarchy and constraint assigning means are supported in appendix 4, pages 8-10, and by appendix 2, page 12, in the discussion of "SET ORIGIN." Therefore, these changes are supported and do not introduce any new matter.

In response to the rejection of Claims 1-7 under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103 as being obvious over Wexelblat, Applicants respectfully traverse the rejection in light of the clarifications to Claims 1 and 7. Claim 1 positively recites a "grouping means...for grouping said first and second virtual objects in the virtual world into a grouped object comprising said first and second virtual objects joined at an intersection of the first and second edges, the grouped object represented by at least one of a three-dimensional and rotatable wireframe object and a three-dimensional and

rotatable sweep polygon." However, Wexelblat does not disclose such a grouping means. Although the system of Wexelblat teaches shapes and combinations of shapes, Wexelblat does not teach or suggest grouping three-dimensional and rotatable wireframe objects or sweep polygons. In fact, the Official Action has not pointed out any support for three-dimensional objects in Wexelblat at all. As shown in the figures of Wexelblat, all parts of the icons of the system are two-dimensional, as would be expected since the "icons... are connected so that they respond directly to either an information system condition or a variable within a simulation algorithm."¹ Therefore, Wexelblat sought to render a scalar value in an alternate way to aid a user in understanding how data is partitioned among databases/cyberspaces while "moving through and inspecting the contents of an information system and graphically depicting the results of that inspection [to enable] a user to interface with data contained within an information system."² In addition, no teaching or suggestion in Wexelblat has been cited to show the "desirability of the modification." The Court of Appeals for the Federal Circuit has stated that:

"Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so."

¹ Wexelblat, column 2, lines 43-46. Emphasis added.

² Wexelblat, column 2, lines 47-55.

Although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.³

Consequently, Claims 1-6 are neither anticipated nor rendered obvious by Wexelblat.

In response to the rejection of Claim 7 under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103 as being obvious over Wexelblat, Applicants respectfully submit that Claim 7 is patentable for at least the reasons set forth for the patentability of Claim 1.

In response to the rejection of Claims 8-9 under 35 U.S.C. § 103 as being unpatentable over Wexelblat in view of Richburg, the rejection is rendered moot by the cancellation of Claims 8 and 9.

In response to the rejection of Claims 1-9 under 35 U.S.C. § 103 as being unpatentable over Wexelblat in view of Richburg and further in view of Fisher. Applicants respectfully traverse the rejection. The Official Action states that "Fisher makes it clear that Applicants' use of wireframe objects and polygon objects in the virtual world is merely the well-known, prior art methodology for depicting objects in a virtual world (Fig. 9)." Since Fisher only adds to Wexelblat the teachings of virtual objects, the Official

³ In re Fritch, 23 USPQ2d 1780, 1784-85 (Fed. Cir. 1992) (quoting ACS Hosp. Systems, Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

Action has not shown that "grouping means" as positively recited in Claim 1 is taught or suggested by any of the references, or that any of the references suggest modifying the cited references to achieve the positively recited limitation.

Furthermore, Applicants respectfully submit that the combination of Wexelblat and Fisher is improper. The Court of Appeals for the Federal Circuit has stated that "obviousness cannot be established by combining pieces of prior art absent some 'teaching, suggestion, or incentive supporting the combination.'"⁴ As was previously cited, Wexelblat is directed to "icons...[that] respond directly to an information system condition or a variable within a simulation algorithm."⁵ Although the Official Action correctly cites that Wexelblat discloses using shapes and combinations of shapes, these are two-dimensional as shown in Figures 1-6 of Wexelblat. Further, there is no teaching or suggestion of using three-dimensional wireframe objects or sweep polygons in Wexelblat because Wexelblat seeks to provide a representation of a scalar value.

Wexelblat also teaches away from the present invention by being directed to a different type of "view" than Fisher. Although Wexelblat does not explicitly teach SQL databases,

⁴ Heidelberger Druckmaschinen AG v. Hantscho Commercial Products Inc., 21 F.3d 1068, 30 USPQ2d 1377, 1381 (Fed. Cir. 1994) (emphasis added) (citing In re Geiger, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)).

⁵ Wexelblat, column 2, lines 43-46. Emphasis added.

Applicants still believe that it is a database "view" that Wexelblat refers to when describing "views." Applicants respectfully point out that Wexelblat discloses "multiple views of information,"⁶ that "FIG. 1 is a conceptual illustration of a central knowledge base 11 for a skyscraper design that comprises a plurality of views 12-18 of the base,"⁷ that the "different views created within the artificial reality for each of the team members together compose a specialized metaphorical representation of the skyscraper,"⁸ and that "one problem with using traditional software techniques to create such environments is that if the problem statement changes even slightly, many of the multiple views will have to be modified."⁹

Further, Applicants respectfully point out that Wexelblat is directed to databases which have views. Wexelblat discloses that:

Communication between the automatic icon and the information contained in the information system may take various forms. In general, it consists of a request for information from the icon system to the information system..., [and if] the information system is a computer database, the information request may take the form of one or more database queries. Then, the information system responds with a return representation. The icon system may be provided with a selection of different communication tools that enable it to interface its mathematical

⁶ Column 4, line 41.

⁷ Wexelblat, column 4, lines 46-48. Emphasis added.

⁸ Column 5, lines 7-10. Emphasis added.

⁹ Column 5, lines 18-21. Emphasis added.

relationships with various objects and query languages encountered within the information space.

When the mathematical relationships of the automatic icon systems are moved through the information contained within the boundaries of the information system, a changing visual display is produced for the user. This movement may be...implemented with database queries. As such movement occurs, the features of the display assume various conditions that indicate to the user the degree of correlation between the associated parameters and the segments of information through which the embodiments of the mathematical relationships are passing.¹⁰

Clearly, Wexelblat is directed to using an icon system to query databases with different information views.

Further, although the Official Action states that column 4, lines 53-68, of Wexelblat teach views in the visual sense, Applicants reiterate that the views are views in a database sense. Each of the circles in Figure 1 of Wexelblat correspond to a portion of the information in the total skyscraper design space that each person has permission to look at based on the "view" they are provided. In fact, "the architect 14 is the leader of the design team and requires many views of the cyberspace 11."¹¹ As such, Applicants respectfully submit that these views are not visual.

Furthermore, even if Wexelblat was combined with Fisher and Richburg, the combination still would not render obvious the subject matter of Claim 1. The combination of Fisher, Richburg and Wexelblat would be a system which creates icons

¹⁰ Column 12, lines 48-64.

¹¹ Column 5, lines 1-3. Emphasis added.

on a virtual control panel. (Virtual control panels are shown in Fisher on the page containing Figure 12.) Therefore, the combination does not render obvious the "grouping means" of Claim 1. Furthermore, Claims 2-6 are believed to be patentably distinguishing for the reasons set forth for the patentability of Claim 1, and Claim 7 is believed to be patentably distinguishing for the reasons set forth for the patentability of Claim 1, or in the alternative, for the reasons set forth for the patentability of Claims 2 and 3 as discussed below.

With reference to the rejection of Claim 2, Applicants respectfully submit that not only is Claim 2 patentable for at least the reasons set forth for the patentability of Claim 1, in addition, Claim 2 further is patentably distinguishing over the prior art of record in its recitation of:

hierarchy means for assigning a grouping hierarchy for the first and second virtual objects wherein the second virtual object is assigned as a child object of the first virtual object and wherein an orientation and a position of the child object is calculated relative to the first virtual object.

Such a limitation is neither taught nor suggested by Wexelblat; therefore, Wexelblat does not anticipate the subject matter of Claim 2. Further, no teaching or suggestion in Wexelblat is disclosed which would have lead one of ordinary skill in the art to modify Wexelblat to achieve the subject matter of Claim 2. Therefore, Wexelblat does not render obvious the subject matter of Claim 2. Likewise, no teaching in Fisher or Richburg has been identified which

overcomes the deficiency in Wexelblat, so the combination of Wexelblat, Richburg and Fisher does not render obvious the subject matter of Claim 2.

In response to the rejection of Claim 3, Applicants respectfully traverse the rejection. Claim 3 positively recites:

origin assigning means for assigning an origin on the first virtual object around which the third virtual object can rotate; and

constraint assigning means for assigning a three-dimensional constraint of motion to the third virtual object to constrain how the third virtual object can rotate with respect to the first virtual object.

Wexelblat does not teach or suggest such an "origin assigning means" or a "constraint assigning means." In addition, Applicants seasonably challenge the assertion in the Official Action that Wexelblat discloses "constraints of motion attributes" as defined in Applicants' specification. The Official Action cites Wexelblat as indicating that the subject matter of Claim 3 is rendered obvious by the recitation of "the view provided within the design space 1 for the plumber 16 is a floor-by-floor view that emphasizes where the piping is going within the sky scraper and that includes artificial reality artifacts that might interfere with the paths chosen for the piping."¹² These constraints are not constraints of motion, rather they are static positional constraints. In further support of "constraints of motion attributes," the

¹² Column 4, lines 60-64.

Official Action states that Wexelblat teaches "flight rules" and that "[i]t would be illogical to assume such a system would allow underground flight of a plane." Although this implies motion, the cited reference does not deal with the flight of planes. Wexelblat describes that:

an illustrative artificial reality is the "flight rules" artificial reality 51 where the user is allowed to operate at a meta-property level. Actions in this artificial reality control the way the base artificial realities affect objects within them. ... [O]ne might use the flight rule artificial reality 51 to modify the color artificial reality 42 so that the x, y and z dimensions represented hue, saturation, and brightness.¹³

This clearly has nothing to do with flight or constraints of motion, but rather how characteristics of some artificial realities can be modified to meet user preference.

Further, the Official Action states that Wexelblat taught many other representations and that "[h]e did not exclude constraints on motion nor is it logical to assume he would do so given the cited examples." However, Applicants respectfully submit that exclusion of a property is not the standard for review when examining prior art. The cited grounds for rejection is quoted in paragraph 16 of the Official Action and states that:

A person shall be entitled to a patent unless --

(e) The invention was described in a patent granted on an application for patent by another filed in the United

¹³ Wexelblat, column 10, lines 15-23.

States before the invention thereof by the Applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of §371(c) of this title before the invention thereof by the Applicant for patent.

Furthermore, the Official Action has not met the requirements for rejection under 35 U.S.C. §103 either which states that:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in the §102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Since the constraints disclosed in Wexelblat are static constraints (i.e., constraints on the path where pipe may be laid), Wexelblat does not disclose "a three-dimensional constraint of motion" as defined in Applicants' specification. Further, since the system of Wexelblat is believed to describe only two-dimensional icons, Wexelblat would not have a need to teach such a "three-dimensional constraint of motion." Also, Fisher fails to teach the same teaching not found in Wexelblat; therefore, the combination of Fisher and Wexelblat does not render obvious the subject matter of Claim 3.

With reference to the rejection of Claims 4-6 as being rendered obvious over Wexelblat in view of Richburg and further in view of Fisher, Applicants respectfully submit that

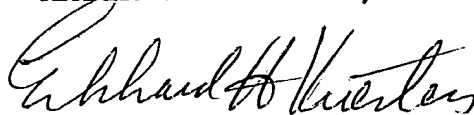
Claims 4-6 are patentably distinguishing for at least the reasons set forth for the patentability of Claim 2.

The present amendment is submitted in accordance with the provisions of 37 C.F.R. §1.116, which after Final Rejection permits entry of amendments placing the claims in better form for consideration on appeal. As the present amendment is believed to overcome the outstanding rejections under 35 U.S.C. §§102 and 103, the present amendment places the application in better form for consideration on appeal. It is therefore respectfully requested that 37 C.F.R. §1.116 be liberally construed, and that the present amendment be entered.

Consequently, the pending claims are believed to be patentably distinguishing over the cited prior art and in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Attorney of Record
Registration No. 25,599
Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

1755 Jefferson Davis Highway
Fourth Floor
Arlington, Virginia 22202
(703) 521-5940
GJM:EHK:MRC:cmc